

CLAIMS

What is claimed is:

1. A method for extending the range of a wireless local area network (WLAN), the WLAN including a base unit connected to a wide area network, the base unit communicating with at least one client unit using a protocol requiring the base unit and the at least one client unit to receive and transmit information on a same frequency chosen from at least two available frequencies, the base unit identifying which of the at least two available frequencies is chosen in a control parameter transmitted in a protocol message associated with the protocol, the method comprising:

transmitting a modified control parameter so that the chosen one of the at least two available frequencies does not correspond to a channel upon which the base unit is operating,

setting a receive channel associated with the client unit to match the chosen one of the at least two available frequencies in the control parameter transmitted by the base unit, and

translating a first information signal transmitted from a first operating channel associated with the base unit and retransmitting the information signal on a second operating channel to the client unit, and translating a second information signal transmitted from the second operating channel associated with the client unit and retransmitting the second information signal on the first operating channel associated with the base unit.

2. The method according to claim 1, further comprising modifying the control parameter such that a different one of the at least two available frequencies is identified as chosen.
3. The method according to claim 1, wherein the base unit is connected to a wired wide area network.
4. The method according to claim 1, wherein the base unit is connected to a wireless wide area network.
5. The method according to claim 1, wherein the protocol includes one of: 802.11a, 802.11b, 802.11a, 802.11g, Bluetooth, TDS-CDMA, TDD-W-CDMA, 802.16, and 802.20.
6. The method according to Claim 1, wherein the translation is performed on an unscheduled basis.
7. In a wireless network including one or more base units and one or more client units, the one or more base units capable of transmitting on a first one of the at least two frequency channels and the one or more client units capable of transmitting on a second one of the at least two frequency channels, each of the one or more base units capable of transmitting a channel identifier, an apparatus for enhancing coverage of the wireless network, comprising:
a frequency translating repeater configured to:

receive the channel identifier identifying the second one of the at least two frequency channels as a designated channel for communicating with the one or more base units;

detecting a first information signal from the one or more base units on the first one of the at least two frequency channels and retransmitting the first information signal on the second one of the at least two frequency channels in accordance with the channel identifier; and

detecting a second information signal from the one or more client units on the second one of the at least two frequency channels and retransmitting the second information signal on the first one of the at least two frequency channels in accordance with the channel identifier.

8. The apparatus according to Claim 7, wherein the first one of the at least two frequency channels includes a 5GHz band frequency channel in accordance with the IEEE 802.11a standard.

9. The apparatus according to Claim 8, wherein the second one of the at least two frequency channels includes a 2.4GHz band frequency channel in accordance with the IEEE 802.11b standard.

10. The apparatus according to Claim 7, wherein the channel identifier includes a direct sequence (DS) parameter signal in accordance with the IEEE 802.11 standard.

11. The apparatus according to Claim 7, wherein each of the one or more base units is configured to transmit the channel identifier identifying the base unit as

transmitting a IEEE 802.11b modulation waveform, and wherein the first one of the at least two frequency channels includes a 5GHz band in accordance with the IEEE 802.11a standard.

12. The apparatus according to Claim 11, wherein the frequency translating repeater is configured to translate the 802.11b modulated waveform from the 5GHz band to the second one of the at least two frequency channels and wherein the second one of the at least two frequency channels includes a 2.4GHz band in accordance with the IEEE 802.11b for retransmission to the one or more client units.

13. The apparatus according to Claim 12, wherein the frequency translating repeater is configured to detect the second information signal on the second one of the at least two frequency channels at the 2.4GHz band from the client unit, and to retransmit the second information signal at the first one of the at least two frequency channels, the frequency translating repeater configured to retransmit the second information signal in a modulation format which modulation format does not conform to the 802.11a orthogonal frequency division modulation (OFDM) standard.

14. In a wireless network including at least two frequency channels, one or more base units and one or more client units, the one or more base units capable of transmitting on the first one of the at least two frequency channels and the one or more client units capable of transmitting on the second one of the at least two frequency channels, the one or more base units capable of transmitting a channel identifier identifying the second one of the at least two frequency channels as a

designated channel for communicating with the one or more base units, an apparatus for enhancing coverage of the wireless network, comprising:

a first wireless repeater unit and a second wireless repeater unit for monitoring the at least two frequency channels and retransmitting a first information signal received on a first one of the at least two frequency channels on a second one of the at least two frequency channels,

wherein the first wireless repeater unit is configured to:

receive the first information signal from the one or more base units on the first one of the at least two frequency channels;

retransmit the first information signal on a third frequency channel;

and

detect and receive the first information signal from the second wireless repeater unit on the third frequency channel, and retransmit the first information signal on the first one of the at least two frequency channels, and

wherein the second wireless repeater unit is configured to:

detect and receive the first information signal from the first wireless repeater unit on the third frequency channel; and

retransmit the first information signal on the second one of the at least two frequency channels, and detect and receive the first information signal from the one or more client units on the second one of the at least two frequency channels and retransmit the first information signal on the third frequency channel.

15. The apparatus according to Claim 14, wherein the channel identifier includes a DS parameter signal in accordance with the IEEE 802.11 standard.

16. The apparatus according to Claim 14, wherein the first wireless repeater unit is configured to monitor a traffic load associated with the first of the at least two frequency channels to establish a load level measurement, and choose one of the second and the third frequency channels for communicating with the one or more base units to equalize the traffic load based on the load level measurement.

17. The apparatus according to Claim 16, wherein the load level measurement includes a determination of which of one or more of the first, second and additional frequency channels has a lowest detected value associated with the traffic load.

18. The apparatus according to Claim 16, wherein the load level measurement is determined by the traffic load associated with the one or more client units relative to the second wireless repeater unit.

19. The apparatus according to Claim 16, wherein the first wireless repeater unit is configured to determine which of the first, the second, and the third frequency channels intended for specific ones of the one or more client units based on a contents of one or more DS parameter messages.

20. The apparatus according to Claim 19, wherein the first wireless repeater unit further includes a memory and is configured to determine using information stored as a table in the memory.

21. The apparatus according to Claim 19, wherein the first wireless repeater unit further includes a memory and is configured to determine using a rule stored in the memory.
22. The apparatus according to Claim 19, wherein the first wireless repeater unit further includes a memory and is configured to determine using a stored constant offset stored in the memory.
23. The apparatus according to Claim 14, wherein the second wireless repeater unit is configured to monitor a traffic load associated with the second of the at least two frequency channels to establish a load level measurement, and choose one of the second and the third frequency channels for communicating with the one or more base units to equalize the traffic load based on the load level measurement.
24. The apparatus according to Claim 23, wherein the load level measurement includes a determination of which of one or more of the first, second and third frequency channels has a lowest detected value associated with the traffic load.
25. The apparatus according to Claim 23, wherein the load level measurement is determined by the traffic load associated with the one or more client units relative to the first wireless repeater unit.
26. The apparatus according to Claim 23, wherein the second wireless repeater unit is configured to determine which of the first, the second, and the third frequency

channels intended for specific ones of the one or more client units based on a contents of one or more DS parameter messages.

27. The apparatus according to Claim 26, wherein the second wireless repeater unit further includes a memory and is configured to determine using information stored as a table in the memory.

28. The apparatus according to Claim 26, wherein the second wireless repeater unit further includes a memory and is configured to determine using a rule stored in the memory.

29. The apparatus according to Claim 26, wherein the second wireless repeater unit further includes a memory and is configured to determine using a stored constant offset stored in the memory.